

Notice of Allowability

Application No.

09/942,999

Examiner

Dac V. Ha

Applicant(s)

SIM, DONG HI

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed on 08/31/01.
2. ☒ The allowed claim(s) is/are 1-7, 12, 13, 15, 14, 8-11, renumbered as 1-15, respectively.
3. ☒ The drawings filed on 31 August 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 08/31/01, 08/20/02
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

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Allowable Subject Matter

1. Claims 1-15 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter:

The present invention relates to method for processing signal in communication system having plurality antennas. Conventionally, in such system, an autocovariance matrix of signals sampled from the signals before being despread is calculated, an autocovariance matrix of signals sampled from the signals after being despread is calculated, and the weight vector for the spatial processing is calculated from the matrices. Prior art of record, taking individually or collectively, fails to fairly teach an improved method for processing signal in a communication system having a plurality of antennas including the claimed subject matter "(a) extracting a first signal mostly including a specific signal, and a second signal mostly including a signal other than the specific signal, from a signal received at the plurality of antennas; (b) calculating an autocovariance matrix of each of the first and second signals; (c) dividing at least any one of the calculated autocovariance matrices into a diagonal component and a non-diagonal component, to separate the matrix into matrices of the components" in independent claim 1 (claims 2-15 depend therefrom). Thus, claims 1-15 are found to be novel and unobvious over prior art of record.

Conclusion

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3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kuwahara et al. (US 6,597,678) disclose Radio Communication System Using Adaptive Array Antenna.

Kwon et al. (US 6,587,451) disclose Smart Antennas For IMT-2--- Code Division Multiple Access Wireless Communications.

Thomas et al. (US 6,141,393) disclose Method And Device For Channel Estimation, Equalization, And Interference Supression.

Choi et al. (US 5,808,913) disclose Signal Processing Apparatus And Method For Reducing The Effects Of Interference And Noise In Wireless Communications Utilizing Antenna Array.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dac V. Ha whose telephone number is 571-273-3040. The examiner can normally be reached on 5/4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Dac V. Ha", written over a horizontal line.

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